#19 Appeal Brief 5/4/01 KRamelo

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of | Atty. Docket

KARS-MICHIEL H. LENSSEN ET AL. | PHN 16,435

Serial No.: 09/108,643 | Group Art Unit: 2673

Filed: July 1, 1998 | Examiner: D. Lewis

INPUT DEVICE





Commissioner for Patents
Washington, D.C. 20231

Sir:

BRIEF FOR APPELLANTS

This is an appeal from the Examiner of Group 2673 finally rejecting claims 1, 3-6 and 8-15 in this application.

(1) Real Party in Interest

The real party in interest in this application is U.S. Philips Corporation, by virtue of an assignment from the inventors recorded on July 1, 1998, at Reel 9299, Frames 0764-0765.

(2) Related Appeals and Interferences

There are no appeals and/or interferences related to this application.

(3) Status of the Claims

Claims 1, 3-6 and 8-15 stand finally rejected by the Examiner (claims 2 and 7 had been previously cancelled).

(4) Status of Amendments

There was one (1) Response filed after final rejection of the claims on January 5, 2001, which was considered by the Examiner.

(5) Summary Of The Invention

The subject invention relates to an input device for moving a graphic element on a display. Typically, an input device includes cursor keys for moving a graphic element on a display, in which, for example, for separate keys are arranged for moving the graphic element in the up, down, left and right directions. Other input devices, for example, a computer mouse, replace the separate keys with a rolling ball in which the direction in which the ball is moved is detected and translated to a corresponding movement of the graphic element on the display.

It is desirous to provide an input device that is more intuitive, that is, one that can interpret the movement of the input device by the user in free space. In order to accomplish this, the subject invention, as described in the specification on page 5, lines 7-28, the input device includes sensors 104, 108 and 112 for measuring three respective components Hx, Hy and Hz, respectively, of a magnetic field surrounding the input device.

This magnetic field may be the geomagnetic field of the earth or a local magnetic field. Then when the orientation of the input device is changed, new output signals result from which the new position of the input device may be calculated. In order to determine the X (horizontal) and Y (vertical) movement of the graphic element on the display (as shown, for example, in Fig. 2), as described in the specification on page 9, line 18 to page 10, line 4, the input device includes a controller 304 for controlling the movement of the graphic element, and calculation means 306 for calculating the X-signal and the Y-signal. The calculation of the X-signal and the Y-signal is performed in accordance with the formulae described in the specification on page 6, line 3 to page 7, line 12.

(6) Issues

(A) Whether claims 6, 8-10, 14 and 15 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

(B) Whether the invention, as claimed in claims 1, 3-6 and 8-10, is anticipated, under 35 U.S.C. 102(a), by U.S. Patent 5,991,085 to Rallison et al.

(C) Whether the invention, as claimed in claims 11-15, is unpatentable, under 35 U.S.C. 103(a), over Rallison et al.

(7) Grouping Of Claims

Appellants assert that claims 6, 8-10, 14 and 15 stand and fall together, and claims 1, 3-5 and 11-13 stand and fall together.

(8) Arguments

(A) Claims 6, 8-10, 14 and 15 are related to an input device. Claim 6 as originally filed claimed "… calculation means for calculating a first signal…." Claim 7 (now cancelled) depended from claim 6 and had claimed "… the calculation means are further arranged for calculating a second signal…." In an amendment filed October 5, 2000, Appellants had cancelled claim 7 and incorporated the limitations thereof into claim 6 such that claim 6 now recites "… first calculation means for calculating a first signal X…" and "… second calculation means for calculating a second signal Y…."

The Examiner has now rejected claim 6 (along with the claims depending therefrom) in that "Said second calculating means of the amended Claim 6 is not found in the specification. Figure 3 item 306 represents a single calculating means, said second calculating means is missing."

In the specification on page 9, lines 20-21 (describing Fig. 3), it is stated "The input device further comprises calculation means for calculating the X-signal and the Y-signal…." Appellants submit that while the specification may describe a single device for performing two different tasks (which may be a preferred mode, or best mode for performing the tasks), there is nothing in the

Patent Law or Rules that would prevent Appellants from claiming the same as two separate means + function clauses.

In support of the above, Appellants would like to call the Board's attention to *In re Wertheim, et al.*, 191 USPQ 90 at 98 (CCPA, 1976), wherein the court states:

> "If lack of literal support alone were enough to support a rejection under § 112, then the statement of *In re Lukach, supra, 58 CCPA at 1235, 442 F.2d at 969, 169 USPQ at 796,* that 'the invention claimed does not have to be described in ipsis verbis in order to satisfy the description requirement of § 112,' is empty verbiage. The burden of showing that the claimed invention is not described in the specification rests on the PTO in the first instance, and it is up to the PTO to give reasons why a description not in ipsis verbis is insufficient."

In view of the above, Appellants therefore believe that the recitation of "second calculation means for calculating a second signal Y" is not new subject matter.

(B) The Rallison et al. discloses a head-mounted personal visual display apparatus with image generator and holder in which, at col. 19, lines 14-23, it is stated "In one embodiment described more thoroughly below, the tracker combines a 3-axis magnetic sensing system and a 2-axis gravimetric sensing system to calculate angles for pitch, roll and yaw. As used herein, "pitch" refers to rotation or pivoting of the head in a medial axis or plane (a nodding motion), "roll" refers to rotation of the head in a lateral plane (e.g. leaning the left ear toward the left shoulder), and "yaw" refers to rotation about the spinal axis (generally corresponding

to compass heading when the user is generally upright)." While this would cover all movements of the apparatus, this passage does not identify which of the sensing systems detect which movements. However, at col. 5, lines 13-16, it is stated "In one particular embodiment, three pairs of orthogonally-mounted magnetoresistive sensors, each pair forming two legs of one of three Wheatstone bridges provide yaw detection."

Appellants submit that while the apparatus of Rallison et al. measures three orthogonal components of the magnetic field, the apparatus uses these three components to determine yaw. This would equate to only the X-signal of the subject invention. Rather, the subject invention uses at least two of the measured components to calculate the first signal X representing a translation of the graphic element in a first direction (e.g., horizontal) on the display, and at least two of the measured components, at least one of which is different from the at least two used to calculate the first signal X, to calculate the second signal Y representing a translation of the graphic element in a second direction (e.g., vertical) on the display.

Appellants submit that this is neither shown nor suggested by Rallison et al.

(C) The subject invention uses the formulae as claimed in claims 11-15 to calculate the X-signal for the translation of the graphic element in a first direction on the display, and the Y-signal for

the translation of the graphic element in a second direction on the display using the measured quantities of the magnetic field.

Rallison et al., on the other hand, finds it necessary to first use the measured quantities of the magnetic field to determine yaw movements of the apparatus, and then, in addition, a 2-axis gravimetric sensing system to calculate angles of pitch and roll of the Rallison et al. apparatus. Since the Rallison et al. apparatus is a head-mounted personal visual display apparatus, these yaw, pitch and roll calculations are then used to control the image generated for the apparatus for providing, for example, a virtual reality or other simulated environment for the user.

Hence, while it is arguably known to use Euler angle calculations when dealing with orthogonal vectors in space (e.g., in Rallison et al. at col. 27, lines 18-21), Appellants submit that Rallison et al. does not show or suggest the use of the formulae claimed in claims 11-15, for calculating an X-signal defining translation of a graphic element in a first direction on a display, and a Y-signal defining translation of a graphic element in a second direction on a display, using measured components of a magnetic field.

(9) Conclusion

Based on the above arguments, Appellants believe that the claims contain subject invention that is described in the specification in such a manner as to reasonably convey to one

skilled in the art that the inventors, at the time the specification was filed, had possession of the claimed invention.

Appellants further believe that the subject invention, as claimed, is neither anticipated nor rendered obvious by the prior art, and as such, is patentable thereover.

Therefore, Appellants respectfully request that this Board reverse the decisions of the Examiner and allow this application to pass on to issue.

Respectfully submitted,

by _____
Edward W. Goodman, Reg. 28,613
Attorney

CERTIFICATE OF MAILING

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COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

On April 26, 2001

By _____

(10) Appendix

## CLAIMS ON APPEAL

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1. (Twice amended) A method for controlling a graphical element on a display through manipulation of an input device, the method comprising:

measuring a plurality of components of a magnetic field related to an orientation of the input device, said plurality of components not being dependent to each other; and

controlling the graphical element on the basis of the plurality of components,

characterized in that the controlling step includes the sub-steps:

calculating a first signal X on the basis of at least two of the plurality of components, the first signal representing a translation movement of the graphical element in a first direction on the display; and

calculating a second signal Y on the basis of at least two of the plurality of components, at least one of the at least two of the plurality of components being different from the at least two components used for calculating the first signal, the second signal representing a translation movement of the graphical element in a second direction on the display.

3. (Twice amended) The method as claimed in Claim 1, wherein the

controlling step includes an initialization step for measuring reference values of the plurality of components with respect to an orientation of the input device at an instant of executing the initialization step, and wherein the calculating sub-steps calculate the first and second signals on the basis of a difference between current values and the reference values of respective ones of the at least two of the plurality of components.

4. (Twice amended) The method as claimed in Claim 3, wherein in said initialization step the measuring step measures three components of the magnetic field resulting in a measurement of the strength of the magnetic field, and wherein the initialization step is executed if the difference in strength of the magnetic field, between two successive executions of the measuring step, is larger than a predetermined threshold.

5. (Amended) The method as claimed in Claim 1, wherein the magnetic field is generated by a permanent magnet or an electromagnet.

6. (Twice amended) An input device for controlling a graphical element on a display, the input device comprising:

a plurality of sensors for measuring a respective plurality of components of a magnetic field related to an orientation of the input device, said plurality of components not being dependent to

each other; and

a controller for controlling the graphical element on the basis of the plurality of components,

characterized in that the controller comprises:

first calculation means for calculating a first signal X on the basis of data from at least two of the plurality of sensors, the first signal representing a translation movement of the graphical element in a first direction on the display; and

second calculation means for calculating a second signal Y on the basis of data from at least two of the plurality of sensors, at least one of the at least two of the plurality of sensors being different from the at least two sensors used in calculating the first signal, the second signal representing a translation movement of the graphical element in a second direction on the display.

8. (Twice amended) The input device as claimed in Claim 6, wherein said input device further comprises reset means for measuring reference data of the plurality of sensors with respect to an orientation of the input device, and wherein the first and second calculation means calculate the first and second signals on the basis of a difference between current data and the reference data of respective ones of the at least two of the plurality of sensors.

9. (Amended) The input device as claimed in Claim 6, wherein at least one of the plurality of sensors is an MR (magnetoresistive)

sensor.

10. (Twice amended) The input device as claimed in Claim 6, wherein two of the plurality of sensors comprise an MR sensor, and wherein a third of the plurality of sensors comprises a Hall sensor, the three sensors being manufactured on a single substrate.

11. The method as claimed in claim 1, wherein said steps of calculating the first and second signals use the formulas:

$$X = \frac{V_{x0}V_y - V_{y0}V_x}{\sqrt{V_x^2 + V_y^2} \bullet \sqrt{V_{x0}^2 + V_{y0}^2}} \quad \text{and} \quad Y = \frac{V_{x0}V_z - V_{z0}V_x}{\sqrt{V_x^2 + V_z^2} \bullet \sqrt{V_{x0}^2 + V_{z0}^2}},$$

where $V_{x0}$, $V_{y0}$ and $V_{z0}$ are the measured components of the magnetic field.

12. The method as claimed in claim 11, wherein the controlling step includes an initialization step for measuring reference values of the plurality of components with respect to an orientation of the input device at an instant of executing the initialization step, and wherein the calculating sub-steps calculate the first and second signals on the basis of a difference between current values and the reference values of respective ones of the at least two of the plurality of components, and wherein said steps of calculating the first and second signals use the formulas:

$$X = \frac{V_{x0}V_y - V_{y0}V_x}{\sqrt{V_x^2 + V_y^2} \bullet \sqrt{V_{x0}^2 + V_{y0}^2}} \quad \text{and} \quad Y = \frac{V_{x0}V_z - V_{z0}V_x}{\sqrt{V_x^2 + V_z^2} \bullet \sqrt{V_{x0}^2 + V_{z0}^2}},$$

where $V_{x0}$, $V_{y0}$ and $V_{z0}$ are the measured reference data.

13. The method as claimed in claim 12, wherein in said initialization step, the measuring step measures three components of the magnetic field resulting in a measurement of the strength of the magnetic field, and wherein the initialization step is executed if the difference in strength of the magnetic field, between two successive executions of the measuring step, is larger than a predetermined threshold.

14. The input device as claimed in claim 6, wherein said first and second calculation means use the formulas:

$$X = \left( \frac{V_y}{\sqrt{V_x^2 + V_y^2}} \right) \quad \text{and} \quad Y = \left( \frac{V_z}{\sqrt{V_x^2 + V_z^2}} \right),$$

where $V_x$, $V_y$ and $V_z$ are the measured components of the magnetic field.

15. The input device as claimed in claim 14, wherein said input device further comprises reset means for measuring reference data of the plurality of sensors with respect to an orientation of the input device, and wherein the first and second calculation means calculate the first and second signals on the basis of a difference

between current data and the reference data of respective ones of the at least two of the plurality of sensors, and wherein the first and second calculation means use the formulas:

$$X = \frac{V_{x0}V_y - V_{y0}V_x}{\sqrt{V_x^2 + V_y^2} \bullet \sqrt{V_{x0}^2 + V_{y0}^2}} \quad \text{and} \quad Y = \frac{V_{x0}V_z - V_{z0}V_x}{\sqrt{V_x^2 + V_z^2} \bullet \sqrt{V_{x0}^2 + V_{z0}^2}},$$

where $V_{x0}$, $V_{y0}$ and $V_{z0}$ are the measured reference data.

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Examiner: D. Lewis



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Sir:

Enclosed is an original plus two copies of an Appeal Brief in the above-identified patent application.

Please charge the fee of $310.00 to Deposit Account No. 14-1270.

Respectfully submitted,

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